

ABSTRACT

In accordance with the present invention, compositions and methods are provided in which the mechanical strength and durability of a precursor material having a plurality of pores is increased by a) providing a precursor material; b) treating the precursor material to form a nanoporous aerogel, preferably by using a supercritical drying process; c) providing a blending material having a reinforcing component and a volatile component; d) combining the nanoporous aerogel and the blending material to form an amalgamation layer; and e) treating the amalgamation layer to increase the mechanical strength of the layer by a substantial amount, and to ultimately form a low dielectric material that can be utilized in various applications.